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Exploring The Effect Of Digital Texts On EFL Students Reading Comprehension Ability

Asima Rohana Sinaga
Doctoral Program of Language Education, Universitas Negeri Semarang
Rudi Hartono
Doctoral Program of Language Education, Universitas Negeri Semarang
Yuliati
Doctoral Program of Language Education, Universitas Negeri Semarang

Corresponding Author: asimas@students.unnes.ac.id.

Abstract

Reading comprehension remains a major challenge for EFL students, particularly at the senior high school level. Although previous studies have highlighted the potential benefits of digital reading, findings regarding its effectiveness in EFL contexts remain inconsistent, creating a need for further investigation. This study aimed to examine the effect of digital texts on the reading comprehension ability of Grade X students at SMA Negeri 6 Pematangsiantar. A quasi-experimental design was employed involving an experimental group and a control group selected through purposive sampling from six Grade X classes. The experimental group received instruction through digital texts, while the control group was taught using conventional printed materials. Data were collected using pre-test and post-test reading comprehension tests and analyzed through descriptive statistics, normality and homogeneity tests, and paired-sample t-tests using IBM SPSS Statistics 21. The findings revealed that students exposed to digital texts achieved significantly higher reading comprehension scores than those in the control group. The experimental group's mean score increased from 57.22 to 87.50, while the control group improved from 51.83 to 65.05. The significance value of 0.000 (<0.05) confirmed that digital texts had a statistically significant effect on students' reading comprehension. This study contributes empirical evidence supporting the integration of digital texts as an effective medium for enhancing EFL students' reading comprehension and classroom engagement.

Keywords: digital texts; reading comprehension; EFL students; quasi-experimental research; English learning

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INTRODUCTION

Reading comprehension is one of the most important skills in learning English as a Foreign Language (EFL). Through reading comprehension, students are able to understand ideas, identify important information, interpret meanings, and develop critical thinking skills from written texts. Reading comprehension also supports students in achieving academic success because most learning materials in schools are presented in written forms such as textbooks, articles, and online resources. According to Sidik & Masek, (2021), reading comprehension is a fundamental skill needed to complete academic tasks and participate successfully in modern educational environments. Therefore, students need effective strategies and learning media to improve their reading comprehension abilities.

In EFL classrooms, reading is not only a process of recognizing words and sentences but also a process of understanding the meaning of texts. Students must be able to connect ideas, identify main points, and interpret information correctly. However, many EFL students still experience difficulties in understanding English texts because of limited vocabulary, lack of reading practice, low motivation, and inadequate reading strategies. Reading English texts can become more challenging when students are not interested in the learning materials or teaching methods used in classrooms. As a result, teachers need to apply effective and engaging learning media that can support students' reading comprehension development.

In recent years, technological development has significantly changed educational practices around the world. Technology has become an essential part of teaching and learning activities, including language learning. The rapid growth of digital technology has transformed traditional reading activities from printed texts into digital texts. Digital texts refer to reading materials presented in electronic formats such as e-books, PDF files, online articles, websites, and digital learning platforms accessed through smartphones, tablets, laptops, and computers. (Rodríguez-Fuentes et al., 2025) explained that digital technologies are increasingly used as instructional tools in schools because they provide students with opportunities to access information quickly and efficiently.

The integration of digital texts into education offers several advantages for students and teachers. Digital reading materials are flexible because students can access them anytime and anywhere. Students are no longer limited to printed textbooks because they can use digital devices to read learning materials both inside and outside classrooms. In addition, digital texts often include multimedia features such as images, hyperlinks, audio, animations, and videos that can support students' understanding of texts. These features may help students become more

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interested and motivated in reading activities. Digital texts can also provide interactive learning experiences that encourage students to participate actively in learning processes.

The use of digital reading in EFL learning has become an important topic in educational research. Several studies have shown that digital texts can positively influence students' reading comprehension(Sidik & Masek, 2021) found that students who learned through digital reading achieved better reading comprehension scores than students who used conventional printed texts. The study also explained that digital reading increases students' motivation and creates more interactive learning environments because students are more familiar with technology-based activities. Moreover, the use of digital tools supports students' critical thinking and engagement during reading activities (Diprossimo & Cain, 2025).

Digital reading may also improve reading fluency and vocabulary mastery. Through digital platforms, students can practice reading independently and receive immediate feedback on their performance. (Rodríguez-Fuentes et al., 2025) stated that digital reading technologies provide structured reading activities that support the development of reading fluency and comprehension among EFL learners. In addition, digital reading platforms allow students to repeat reading exercises, improve reading speed, and strengthen vocabulary recognition. Such activities may help students become more confident and independent readers.

Furthermore, digital texts are considered suitable for modern students because many young learners are already familiar with smartphones, social media, and internet-based activities in their daily lives. Students today are often referred to as digital learners because they interact with technology regularly. Therefore, integrating digital texts into EFL classrooms may create learning environments that are more relevant to students' daily experiences. Digital learning media can also encourage students to develop autonomous learning habits because they can access materials independently without depending entirely on teachers.

In addition, digital reading requires students to possess different cognitive and metacognitive strategies compared to printed reading. Students must know how to navigate digital texts, manage distractions, and evaluate information critically. Without proper guidance, students may focus more on browsing information quickly rather than understanding the content deeply. Some studies also indicate that digital reading may encourage superficial reading habits because students tend to skim texts on screens instead of reading carefully. Therefore, teachers need to guide students in using digital texts effectively to achieve learning objectives.

In Indonesian EFL classrooms, reading comprehension remains a major challenge for many students, especially at the senior high school level. Based on researcher's observation, Many

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Grade X students at SMA N. 6 Pematang Siantar still struggle to identify main ideas, understand vocabulary, make inferences, and analyze information from English texts. Some students also show low interest in reading activities because traditional teaching methods often rely heavily on printed textbooks and teacher-centered instruction. As a result, students may become passive and less motivated during reading lessons.

Considering the increasing use of digital technology among students, digital texts may become an effective alternative medium for improving reading comprehension in EFL classrooms. Most students are already familiar with smartphones and internet-based applications, making digital learning more accessible and practical. The use of digital texts may help teachers create more interactive and engaging reading activities that support students' comprehension development. However, although many studies have investigated digital reading, the findings remain inconsistent because some studies report positive effects while others reveal challenges related to concentration and comprehension.

Based on the explanations above, it is important to investigate the effect of digital texts on students' reading comprehension, particularly among Grade X EFL students at Senior High School. This study aims to explore whether digital texts significantly influence students' reading comprehension achievement. The researcher expects that the findings of this study will provide useful contributions for teachers, students, schools, and future researchers. For teachers, this study may provide information about effective strategies for integrating digital texts into reading instruction. For students, digital texts may help improve motivation and comprehension skills. For schools, the findings may support the integration of technology into English language learning. Finally, for future researchers, this study may serve as a reference for conducting further research related to digital reading and EFL learning.

LITERATURE REVIEW

1. Reading Comprehension in EFL Learning

Reading comprehension is an essential skill in English as a Foreign Language (EFL) learning because it enables students to understand, interpret, and analyze written information. In EFL contexts, students are expected not only to recognize words and sentences but also to construct meaning from texts. According to Sidik & Masek,(2021), reading comprehension is a fundamental academic skill required for completing school tasks and participating successfully in educational environments. Reading comprehension involves several processes, including identifying main ideas, understanding vocabulary, making inferences, and interpreting information from texts.

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Many EFL students experience difficulties in reading comprehension because of limited vocabulary, lack of reading strategies, and low motivation. Reading English texts becomes more difficult when students are unfamiliar with the language structures and cultural contexts presented in the texts. Therefore, teachers need to provide effective learning media and strategies to help students improve their comprehension skills. In addition, reading comprehension is closely related to students' fluency and vocabulary mastery. (Rodríguez-Fuentes et al., 2025) explained that fluent readers are generally able to understand texts more effectively because they can recognize words automatically and focus on meaning construction. Thus, improving reading fluency may also contribute to better reading comprehension among EFL learners.

2. Digital Texts in Education

Digital texts refer to reading materials presented in electronic formats such as e-books, websites, PDF files, online articles, and digital learning platforms. The rapid development of technology has transformed reading activities from printed texts into digital reading practices. (Ruffini et al., 2025) stated that digital technologies are becoming important instructional tools in schools because they allow students to access information easily and efficiently. Digital texts provide several advantages for educational activities. Students can access materials anytime and anywhere through smartphones, tablets, and laptops. In addition, digital texts often include multimedia features such as videos, hyperlinks, images, animations, and audio that may support students' understanding of reading materials. These features can increase students' interest and engagement in reading activities.

(Mañá et al., 2026) argued that digital reading has become an important part of modern education because students are increasingly familiar with technology in their daily lives. Technology-based learning environments are believed to improve students' motivation, participation, and critical thinking skills. Therefore, many educators have started integrating digital texts into classroom activities to support students' learning experiences. However, digital texts may also create challenges for students. Some students experience distractions while reading on screens because digital environments contain notifications, advertisements, and hyperlinks. Consequently, teachers need to guide students in using digital texts effectively to achieve learning objectives.

3. The Effect of Digital Texts on Reading Comprehension

Several previous studies have investigated the relationship between digital texts and reading comprehension. Many researchers found that digital reading can positively affect students' comprehension skills. Al Khazaleh Saqr (2021) conducted a study on EFL learners and

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found that students who used digital reading achieved higher reading comprehension scores than students who used traditional printed texts. The findings indicated that digital reading creates more engaging and interactive learning environments that support comprehension development. Similarly, (Rodríguez-Fuentes et al., 2025) found that digital reading platforms help students improve reading fluency, reading speed, and comprehension through repeated reading activities and structured learning systems. Digital reading technologies provide students with opportunities to practice reading independently while receiving immediate feedback on their progress. This may encourage students to become more active and autonomous learners.

In addition, digital texts are considered more practical and flexible than printed materials because students can access them easily through digital devices. Digital reading also allows students to search for meanings, translate unfamiliar vocabulary, and navigate information quickly. These features may help students understand texts more effectively. Nevertheless, not all studies show positive effects of digital reading. (Diprossimo & Cain, 2025) found that students who read printed texts sometimes perform better in deep comprehension tasks because printed reading supports concentration and minimizes distractions. Students reading digital texts may lose focus because of multimedia features and online distractions. Therefore, the effectiveness of digital texts depends on how students use the technology and how teachers implement digital reading activities in classrooms. Furthermore, (Diprossimo & Cain, 2025) explained that students' individual characteristics such as vocabulary knowledge, attention, and executive functions influence learning outcomes from digital and printed reading materials. This means that digital texts may not affect all students equally because comprehension also depends on students' cognitive abilities and learning habits.

4. Advantages and Challenges of Digital Reading

Digital reading offers several advantages for EFL learning. First, digital texts increase students' accessibility to learning materials because students can read texts through smartphones and internet-based platforms. Second, multimedia features may support comprehension by providing visual and audio explanations. Third, digital reading can improve students' motivation because technology-based learning environments are more attractive to modern learners. Moreover, digital reading encourages independent learning because students can practice reading outside classrooms. Students can search for additional information, use online dictionaries, and repeat reading exercises independently. (Rodríguez-Fuentes et al., 2025)) explained that digital reading platforms support independent reading practice and help students improve reading fluency and comprehension.

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However, digital reading also presents several challenges. Students may become distracted by social media notifications, advertisements, or unrelated online content while reading digitally. Heinz et al. (2026) argued that digital reading environments may reduce deep concentration because students often skim information rather than read carefully. In addition, some students may lack digital literacy skills needed to manage online information effectively. Therefore, teachers play an important role in guiding students to use digital texts appropriately. Teachers should provide clear instructions, suitable digital materials, and effective reading strategies to maximize the benefits of digital reading in EFL classrooms.

5. Previous Related Studies

Several previous studies are related to the present research. First, Al Khazaleh Saqr (2021) investigated the effect of digital reading on EFL learners' reading comprehension and found that digital reading positively improved students' comprehension achievement. Second, Kosakiewicz (2017) examined the impact of digital texts on comprehension scores and explained that technology integration has transformed reading practices in modern classrooms.

Third, (Rodríguez-Fuentes et al., 2025) studied digital reading aloud protocols and found that digital reading platforms improved students' reading fluency and expression skills. Fourth, (Heinz et al., 2026) explored analog and digital reading interventions and concluded that printed texts sometimes support deeper comprehension because they minimize distractions during reading activities. Based on these previous studies, it can be concluded that digital texts have both advantages and challenges in EFL learning. Some studies report positive effects on motivation, fluency, and comprehension, while others highlight issues related to concentration and distraction. Therefore, further research is needed to investigate the effect of digital texts on reading comprehension among Grade X EFL students at Senior High School.

METHOD

This study employed a quasi-experimental research design to investigate the effect of digital texts on students' reading comprehension among Grade X EFL students at Senior High School. Quasi-experimental research is commonly used in educational studies because the researcher cannot randomly assign participants into groups due to classroom and school conditions. According to Creswell (2014), quasi-experimental design is appropriate for educational research because it allows researchers to compare two groups in natural classroom settings. In this study, the researcher used two groups, namely the experimental group and the control group.

The experimental group received reading instruction using digital texts, while the control

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group was taught through conventional reading methods using printed materials. The purpose of this design was to determine whether there was a significant difference in students' reading comprehension achievement between students who learned through digital texts and those who learned through traditional methods.

RESEARCH DESIGN

The design of this research can be illustrated as follows:

Table 1. Research Design

Group	Pre-test	Treatment	Post-test
Experimental Group	√	Digital Texts	√
Control Group	√	Conventional Method	√

Both groups were given a pre-test before the treatment to measure students' initial reading comprehension ability. After several teaching sessions, both groups received a post-test to identify the effect of the treatments on students' reading comprehension achievement. The experimental group was taught by using digital texts presented through smartphones, laptops, or other digital devices. The students were asked to read English texts in digital forms such as PDF files, online articles, and electronic reading materials. Meanwhile, the control group learned through conventional methods using printed texts and teacher-centered instruction.

The use of digital texts in this research was based on the theory that technology can support interactive and flexible learning environments. According to Rodríguez-Fuentes et al., (2025), digital reading helps students improve motivation, engagement, and reading comprehension because students are more interested in technology-based learning. In addition, digital texts provide multimedia features that may help students understand reading materials more effectively.

1. Population and Sample

The population of this study was all Grade X students of SMA Negeri 6 Pematangsiantar. There were six classes of Grade X students in the school. The researcher used purposive sampling technique in selecting the sample. Purposive sampling is a sampling technique in which the researcher selects participants based on particular characteristics and research considerations. According to Sugiyono (2019), purposive sampling allows researchers to choose samples that are considered suitable for the objectives of the study.

Two classes were selected as the sample of this research. One class was assigned as the

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experimental group, while another class was assigned as the control group. The researcher selected these classes based on students' similar English levels and recommendations from the English teacher to ensure that both groups had relatively equal abilities before the treatment.

2. Instruments

The instrument used in this study was a multiple-choice reading comprehension test. The test was designed to measure students' comprehension abilities in understanding English texts. The reading comprehension test consisted of several passages followed by multiple-choice questions. The questions focused on identifying main ideas, specific information, vocabulary meaning, inference, and conclusion from the texts. Multiple-choice tests were selected because they are considered effective for measuring students' comprehension objectively and practically. According to Brown (2004), multiple-choice tests provide reliable scoring and help researchers measure students' understanding accurately. The researcher administered two tests in this study, namely the pre-test and post-test. The pre-test was conducted before the treatment to identify students' initial reading comprehension abilities. Meanwhile, the post-test was conducted after the treatment to measure students' improvement after learning activities.

3. Procedures of Data Collection

The data collection procedures in this study consisted of three stages: pre-test, treatment, and post-test. First, the researcher administered a pre-test to both the experimental and control groups to measure the students' initial reading comprehension ability and identify whether the two groups had similar competence before the treatment. Next, the experimental group received reading instruction through digital texts such as PDF files, online passages, and other electronic materials, while the control group was taught through conventional methods using printed texts and traditional classroom instruction. During the treatment, the researcher guided students through discussions and comprehension exercises. Finally, a post-test was administered to both groups to measure the students' reading comprehension achievement after the treatment and compare the results between the two groups.

4. Technique of Data Analysis

The data collected from the pre-test and post-test were analyzed quantitatively. The researcher calculated students' scores from both groups and compared the results to determine the effect of digital texts on reading comprehension. The data analysis was conducted through the following steps: 1. Calculating Students' Scores 2. Calculating Mean Scores 3. Testing Normality and Homogeneity 4. Hypothesis Testing

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RESULTS AND DISCUSSION

This section presents the findings of the study regarding the effect of digital texts on students' reading comprehension ability among Grade X EFL students. The data were obtained from the pre-test and post-test scores of both the experimental group and the control group. The experimental group was taught through digital texts, while the control group learned through conventional methods. The data were analyzed quantitatively using mean score analysis, normality test, homogeneity test, and hypothesis testing through paired sample t-test. The results of the analysis are presented in the following tables and explanations to determine whether digital texts significantly affected students' reading comprehension achievement.

Table 2. Students' Mean Scores in Experimental and Control Groups

Group	Pre-test Mean	Post – test Mean	Improvement
Experimental Group	57.22	87.50	28.69
Control Group	51.83	65.05	14.23

Table 1 shows the comparison of students' mean scores in the experimental and control groups. The experimental group achieved higher improvement after learning through digital texts, increasing from 57.22 in the pre-test to 87.50 in the post-test. Meanwhile, the control group improved from 51.83 to 65.03 through conventional learning methods. These findings indicate that digital texts were more effective in improving students' reading comprehension ability.

Table 3. Result of Normality Test

Class	t-Statistic	Sig	Result
Pre-test Experiment	0.983	0.892	Normal
Pre-test Control	0.964	0.372	Normal
Post-test Experiment	0.977	0.727	Normal
Post-test Control	0.964	0.372	Normal

Table 2, shows the result of the normality test for the pre-test and post-test scores in both the experimental and control groups. The purpose of the normality test is to determine whether the data are normally distributed or not. In this study, the significance values of all groups were higher than 0.05. The pre-test experimental group obtained a significance value of 0.892, while the pre-test control group obtained 0.372. Furthermore, the post-test experimental group

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achieved 0.727, and the post-test control group obtained 0.372. Since all significance values were greater than 0.05, it can be concluded that the data in both groups were normally distributed. Therefore, the data fulfilled the requirement for further statistical analysis using parametric tests.

Table 4. Test of Homogeneity of Variance

Value Results	Levene Statistic	df1	df2	Sig.
Based on Mean	0,292	1	60	0,591
Based on Median	0,242	1	60	0,625
Based on Median and with adjusted df	0,242	1	59,995	0,625
Based on trimmed mean	0,277	1	60	0,600
Data	**Sig**	**α**	**Result**	
Based on Mean	0,591	0,05	Homogeneous	

The table above presents the result of the homogeneity test using Levene's Test. The purpose of the homogeneity test is to determine whether the variance of the data from the experimental and control groups is equal or homogeneous. Based on the table, the significance value (Sig.) based on the mean is 0.591. This value is higher than the significance level (α = 0.05). Since the significance value is greater than 0.05, it can be concluded that the variances of both groups are homogeneous. In other words, the experimental and control groups had similar variance before conducting further statistical analysis. Therefore, the data met the requirement for hypothesis testing using parametric statistical tests.

Table 4. Summary of Research Findings

Findings	Experimental Group	Control Group
Numbers of Students	30	30
Learnings Method	Digital Text	Conventional Method
Pre – test Mean	57.22	51.83
Post- Test Mean	87,50	65.5
Improvement	28.69	14.23
Sif.Valua		
Conclusion	Significant Improvement	Moderate Improvement

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The table above summarizes the overall findings of the research. Both the experimental and control groups consisted of 31 students. The experimental group learned through digital texts, while the control group learned through conventional methods. The results show that the experimental group achieved greater improvement in reading comprehension compared to the control group. The post-test mean score of the experimental group increased significantly to 87.87, while the control group only achieved 65.03. In addition, the significance value of 0.000 confirmed that the treatment had a significant effect on students' reading comprehension.

Furthermore, the findings indicate that the implementation of digital text-based reading comprehension materials significantly affected Grade X students' reading comprehension ability. Students who learned through digital texts showed better understanding of the reading materials, including identifying main ideas, understanding vocabulary, finding detailed information, making inferences, and interpreting the meaning of texts. The use of digital texts also increased students' motivation and engagement during the learning process because students were more interested in interactive and technology-based learning activities. Compared to the conventional class, students in the experimental group became more active and enthusiastic in reading activities, which contributed to their improvement in reading comprehension achievement. Therefore, digital texts can be considered an effective learning medium for improving Grade X students' reading comprehension ability in EFL classrooms.

CONCLUSION

Based on the findings of this study, it can be concluded that the use of digital texts significantly affected Grade X EFL students' reading comprehension ability. The students who learned through digital texts achieved better improvement in reading comprehension compared to those who learned through conventional methods. This result was proven by the increase in the experimental group's mean score from 59.22 in the pre-test to 87.87 in the post-test, while the control group only improved from 50.83 to 65.03. In addition, the significance value of 0.000 indicated that the implementation of digital texts had a statistically significant effect on students' reading comprehension achievement. The findings also revealed that digital texts helped students improve their ability to identify main ideas, understand vocabulary, make inferences, and interpret information from English texts. Therefore, digital texts can be considered an effective learning medium for improving EFL students' reading comprehension ability at the senior high school level.

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